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AUTHOR Brownell, Celia A.; Brown, Earnestine
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ABSTRACT

This paper focuses on possible relations between early peer skills and developing cognitive abilities. One promising area for discovering relations between cognitive development and peer interaction appears to be related to the young child's developing ability to differentiate self from other, that is, decentration. Decentration is typically indexed by the child's representation of the agency of self versus others in pretense play, and it shows regular developments over the second year. It seems conceptually appealing to think that this growing differentiation of self and other might go hand in hand with growing skills in peer interaction over the second year. A second possible relationship between early peer developments and decentration comes from toddlers' shift from proximal, object-supported peer contacts, to distal, symbolically-mediated contacts. Third, some investigators have recently begun to study the toddler's and preschooler's understanding of rules that regulate social interaction, particularly rules regulating object exchange. Findings of preliminary observations focusing on the development of such rules among toddlers suggest that 18- and 24-month-old children begin to differentiate rules that focus on their own rights as a possessor from rules that also take into account another child's status or rights as a possessor; however, toddlers in the second half of their second year clearly do not operate altogether under shared rules. (RH)

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Toddler Peer Interaction in relation to Cognitive Development

Celia A. Brownell
University of Pittsburgh

and

Earnestine Brown
University of Pittsburgh

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The purpose of this symposium today is to explore possible relations between research in infant/toddler peer interaction and larger social developmental issues by looking both to the past and to the future. Looking back, we might say that the research efforts of the last 10 years or so in some ways "reinvented the wheel". In other words, these recent observations reconfirmed the work of researchers from the 1930's who had already found that the toddler age child is not "asocial" with peers. Those earlier findings however, had been lost, ignored or often misinterpreted in the meantime. So the importance of the rediscoveries of 10 years ago cannot be underestimated. The researchers of a decade ago also went beyond the observations made in the 30's in crucial ways that set the stage for a decade's work.

Conceptually, they contributed 2 frameworks for the development of early peer relations, both of which capitalized on Piaget's notions of cognitive development. Both Lee Lee and Ned Mueller suggested that developing peer skills could be related to sensorimotor developments more generally. They thereby set the stage for research centered on relationships between social and cognitive development during an age period very little studied in either domain.

Empirically, researchers over the past decade have greatly enriched our basic knowledge about the abilities of very young children interacting with their peers. We now have descriptions of how early peer interactions are structured, and the kinds of behaviors used to support them, as well as age differences in both of those aspects. We also have descriptions of various contextual effects on these early peer exchanges, and we have much richer descriptions of the range of abilities involved.

Some of the current issues facing this young field are reflected in today's panel, and include questions about the earliness of the abilities

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displayed; questions about the continuity of early peer skills with parent-infant interaction, with preschool interaction, even with adult interaction; questions about just how extensive the early abilities are -- do they, for example, include the beginnings of friendship? And, still emerging questions about the relations of these early skills with developing cognitive abilities. So future work will have to be directed to 2 broad tasks that encompass these and other issues -- on the one hand, to provide still more detail aabout the basic phenomenon of infant/toddler peer interaction; and on the other hand, to begin to address questions about influences on, or determinants of the acquisition of early peer skills.

This paper focuses on possible relations between early peer skills and developing cognitive abilities, and in so doing suggests, at least indirectly, one potential influence on the acquisition of certain peer skills. We have two purposes here today: first, to discuss and review in very brief and rather broad terms, the general issue and its status in infant/toddler peer research; and secondly, to illustrate it with some work we've begun recently in our lab.

Relations between cognitive and social development in childhood have been studied for some years now, under the general rubric of social-cognition. However, over the last decade we've seen remarkably little trickle-down into infant/toddler research of either the general issues or the specific questions facing childhood researchers. Bill Hartup, for example, has noted in his recent review of the peer relations literature that there are several cognitive factors that might be related to early social development -- such as the decline in egocentrism and the growth in understanding of cause-effect

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relations. He also noted, however, that these relationships have not been widely investigated.

There are no doubt several reasons for that. Perhaps one of the most salient reasons is that infants and toddlers are presymbolic, making both the methodological paradigms of childhood research difficult to adapt to infancy, and the explanatory models inappropriate. Another, equally important, reason is that it has only been in the last decade or so that developmental psychologists have really begun to examine in earnest the nature and the limits of infants' cognitive and perceptual abilities. So researchers in infant/toddler social development haven't had the equivalent cognitive-developmental data base, much less the theoretical systems, that have been available to the childhood researchers in social-cognitive development. But over the last 5 years in particular, we've seen a growing recognition of and interest in social-cognitive development in infants and toddlers. In 1981 an edited volume was published by Lamb and Sherrod which may become as important to infant/toddler social cognition as the 1975 Lewis and Rosemblum volume has been for the study of early peer relations. In the Lamb and Sherrod volume the authors attempted to make clear what the implications were of infant cognitive and perceptual development for various aspects of infant social development, including differentiation of social and nonsocial objects; recognition of emotion; perception of intentionality in social relations, and so forth.

A few investigators have been working for some years now in areas that may ultimately belong in the category of infant/toddler social cognition but it was less than 5 years ago that the area itself was recognized by name. It has now become clear that multiple, complex relationships do indeed exist between social and cognitive development during the first 2 years of life as well as

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later in childhood. As for relationships specifically between infant/toddler peer relations and cognitive development, there was a conspicuous absence of their discussion in the Lamb and Sherrod volume. Despite the publication 10 years ago of Mueller's and Lee's arguments for relations between sensorimotor development and growth in social skills with peers, little work has been done since then to make such relations more explitit. Several investigators have now begun to study the toddler's changing knowledge of other children as social partners. But few attempts have been made to relate this growing knowledge, or the developing peer skills, to specific aspects of the very young child's changing cognitive abilities. It seems clear, however, that the time is right to begin to pursue possible relations between very young children's peer skills and their cognitive development. We now have a fairly substantial empirical base to inform us about early peer skills; we also have some knowledge of the one- and two-year-old's cognitive abilities. So, although we may not be in a position to begin to model or to explain the relations between early social and cognitive development, we are in a position to begin to specify empirical relationships.

It seemed to us that one promising area for discovering relations between cognitive development and peer interaction might be in the young child's developing ability to differentiate self from other. This process is known as decentration among cognitive developmentalists. According to Piaget, decentration is characterized by the child's ability to think about objects and events in the world as independent of herself and her own action schemes. In other words, the child comes to represent herself as one object among all other objects, and realizes that events can have autonomous causes of their own, independent of her actions, her wishes or her intents. This ability, in turn,

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is said to be a function of the transition in the child's thought from sensorimotor and action-based to symbolic, near the end of the second year. Because symbols, in contrast to actions, are independent of the objects or events they refer to, the 2-year old, as opposed to the younger sensorimotor child, can substitute symbols for actions in defining and understanding her world. So with symbolic thought the child for the first time has the means to represent self as an independent entity, independent from objects, from events, and from other selves.

Decentration is typically indexed by the child's representation of the agency of self vs. others in pretense play, and it shows regular developments over the second year. (see Table 1) Between 12 and 15 months the child becomes aware of her own agency with respect to self-centered actions and shows that by, for example, pretending to drink from a cup. But in this case she is both agent and recipient of her own actions. She does not yet evidence awareness of others' agency. Between 15 and 20 months, she can extend the recipient role to others, and so, for example, she pretends to give a drink to a doll where the doll becomes a recipient of her actions. But the child still conceives of herself as the only agent. By 20 to 24 months, she becomes aware that others can be agents of their own behavior as well as recipients of hers, and so for example she now puts a cup in the hands of the doll for it to drink by itself.

It seems conceptually appealing to think that this growing differentiation of self and other might go hand in hand with growing skills in peer interaction over the second year. We would like to briefly consider three possibilities for such a relationship. First, toddlers' ability to adopt behavioral roles in interaction with one another increases over the second year. Mueller was one of the first to describe this progression from simple

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imitative roles to more complex complementary and reciprocal roles. In other words, by the end of the second year, toddlers can both take on 2 different and complementary roles in an interaction (e.g., "chaser" and "chasee"), and they can also exchange them with one another -- either child can perform either role. Other investigators have also observed toddlers' use of roles in games with peers and with adults. Both Dale Hay and Carol Eckerman, for example, have found that games that require cooperation or complementary play behaviors increase both in frequency and sophistication over the second half of the second year. And in our lab we have found that in cooperative problem solving tasks, 2 year olds are much more successful than 18-month olds because they can both adopt complementary roles and at the same time coordinate their behavior to work smoothly together toward a common goal. To be able to adopt interactional roles, and to intercoordinate them, would seem to require that both children recognize that the other child is an independent agent of his or her own behavior. In other words, the child must be able to represent relations between self and other, and be able to understand thay they each can both affect, and be affected by, the other's behavior. That, in turn, requires decentration.

A second possible relationship between early peer developments and decentration comes from another shift over the second year - the shift from <u>proximal</u>, object supported peer contacts, to <u>distal</u> and symbolically mediated contacts. Again, Mueller and Eckerman were among the first to describe this shift, and since then several others have also observed it. What has been found, in general, is that children begin using physical contact and mutual object play as the primary mediators of peer interaction in the first half of the second year. Later, they add vocalizations and gestures over a distance.

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What we may be seeing in the early, proximal, and quite concrete forms of peer play is the child's recognition of the peer simply as a recipient of the child's own actions, much as in giving a drink to a doll. In other words, for the very young toddler, the peer may still be a passive recipient of the child's own action schemes, not an active agent expected to initiate and respond on his own. It would seem that if the toddler is to direct social behavior to a peer over a distance, she must be able to think of the peer as an active respondent - as an agent of his own behavior, independently able to respond to her bids. Again, this transition would seem to require decentration, the differentiation of self and other.

Third, some investigators have recently begun to study the toddler's and preschooler's understanding of rules that regulate social interaction. One set of rules beginning to receive attention are those that regulate object exchange. Specifically, it seems that toddlers and preschoolers are beginning to understnd "possession rights" as a mediator of object conflict. In other words, the child comes to understand that current or past possession of a toy gives a sort of "prior right" or "claim" to continued or future possession of that toy. This might be described as a developing concept of ownership, one that includes not only personal ownership, but also awareness of others' rights as owners. When these kinds of rules are shared or held mutually by two children, they could be described as a sort of primitive "social contract." And it seems that in order to observe such a contract - in other words, to recognize the claims and rights of the other as well as one's own rights - the child would have to have differentiated self from other, and would have to have some understanding of the other as an independent agent of his own behavior,

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one who can recognize each of their respective rights of possession. This, again, involves decentration.

And this was our focus in some preliminary observations that we would like to report today. We reasoned that if these possession rules were indeed related to decentration, we should see development in them over the second year, the period when decentration shows development (see Table 1). Thus early on, we might expect to see no possession rules or expectations regarding the rights of self or others, since the child's differentiation of self and other is still quite limited. We then might expect what Wanda Bronson has called a "personal" rule to emerge, without recognition of the other's expectations or rights -- i.e., "what's mine is mine and what's yours is mine". Here the child recognizes the other as a focus or recipient of his actions and intents, but does not yet recognize that the other has independent rights of his own. Finally, we would expect to see what Roger Bakeman has called a shared rule, where both children recognize one another's rights and mutually observe them. In conjunction with a shared rule we would also expect to see an increase in positive object negotiation such as sharing, joint play, or turn-taking with desirable toys.

We looked for rule-governed object exchange in much the same way as had Bronson and Bakeman before us. Bronson observed the probability of resistance by a toy owner to attempts by others to take the toy. She also looked for the likelihood of a successful take as a function of how long the toy owner had been in possession of the toy. In other words, she wished to see whether possession of a toy gave the possessor a sense of ownership, and whether that sense of ownership seemed to be greater the longer the child had had the toy in her possession. She found that 17-24 month old toy owners were more likely to

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resist an attempt take than were 12-16 month olds, and that the likelihood of resistance was greater for longer ownership in both age groups. Only among the older toddlers, however, was the taker's probability of success affected by the owner's length of possession. That is, among 17-24 month olds, takers were more successful when owners had just acquired a toy then when owners had had it for some time. It appeared to Bronson, then, that at least among the older toddlers there must have been some recognition of a "prior possession right" such that the longer one had a toy, the greater claim one had to continued possession. Whether that rule was recognized by both the taker and the toy owner could not be inferred from those data. But Bakeman and Brownlee, in a later study, looked for the existence of such a shared rule in toddlers of 12 to 24 months of age. They did so from the taker's perspective, rather than from the toy owner's perspective as had Bronson. Bakeman and Brownlee reasoned that if possession rights were observed by both children, then a taker's prior ownership of a toy should lessen the probability that he would be resisted in an attempt to regain possession, and should also increase his likelihood of success. In other words, if the taker has had a toy before, the current owner should be more willing to give it up if he indeed recognizes the taker's right to continued possession. They found that likelihood of a successful take was greater if the taker had previously had possession of the toy. That is, the taker was more likely to be able to gain possession of a toy from another child if he (the taker) had played with the toy previously. But they also found that the probability of resistance to the take was not affected by whether the taker had had possession of it previously or not. So while prior ownership was related to the success of a take, it was not related to the likelihood of resistance by the current owner. They concluded that their toddlers did not appear to hold shared rules

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of possession rights, because only the outcome of the conflict was affected and not its "initial negotiation".

These data were interesting and provocative to us, and suggested that developments were indeed taking place over the second year. What we wished to do was to look for a transition from a "personal" to a "shared" rule during the second half of the second year -- the time when decentration is a central developmental accomplishment for the young child. And it seemed to us that it would be most fruitful to look at object conflicts from both the taker's and the owner's perspectives, as well as to look for positive object negotiations in addition to conflictual ones. We would like to report here some quite preliminary results from 2 groups of 4 children each who met weekly between 18 and 24 months in our laboratory playroom. The playroom was furnished with a wide variety of toys, including some that could be played with cooperatively and some that could be played with only individually. The data we're reporting were taken from 2 18-month sessions and 2 24-month sessions, yielding about 6 hours of observation. The tapes were coded for all instances of toy-related interaction.

What we were looking for was whether 18-month olds operated on the basis of a personal possession rule, and whether 24 month olds exhibited evidence of shared possession rules (see Table 2). We reasoned that a personal rule would be indicated first by relatively high frequency of attempts to take others' toys, and low frequency of positive object negotiations such as sharing, joint play and cooperation. Second, the probability of resistance by the toy owner to an attempt-take should be high under a personal rule, regardless of whether the taker had previously played with the toy or not. Resistance should also be unrelated to how long the owner has been in possession of the toy. Third, the

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probability of a successful take should be more related to the strength or degree of resistance by the owner, than to whether the taker has had prior possession or to how long the owner has been in possession. In other words, prior ownership should not be recognized as conferring any special rights on either the current possessor or on previous owners.

In contrast, a shared rule would be suggested if the probability of resistance to a take varied as a function of whether the taker had had prior possession of the toy. That is, resistance should be less likely when the taker had played with the toy previously. We would also expect that the likelihood of resistance to an attempt take would be related to how long the owner had had the toy in his current possession. Finally, the probability of a successful take should also vary as a function of whether the taker has previously had possession, as well as how long the owner has been in possession.

Our findings suggest that both the 18-month olds and the 24-month olds are in transition from a personal to a shared rule, with the 24-month olds perhaps slightly more advanced than the 18-month olds. We'll consider first the general qualities of possession negotiations, as pictured in Table 3. As you can see, the older toddlers were relatively less likely to attempt to take toys from one another than were the younger toddlers. They were also more likely to engage in positive object negotiation such as cooperation and sharing. Although older and younger toddlers did not differ in the proportion of episodes in which they resisted, older toddlers did tend to be slightly more successful in taking toys from one another than did younger toddlers. One possible explanation for that pattern is that the older toy owner recognizes that under some circumstances the taker has a right to the toy and so is more willing to give it up. Older children's possession negotiations were also more frequently

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language mediated, including in particular more assertions of self-possession such as "mine". Among older children it appeared that there were also a few more utterances labeling others' toys as belonging to the other child, (e.g., "That's Sarah's") or explicitly requesting a toy from another child, but the age difference was not reliable. On the whole, then, 24-month olds were still engaging in a fairly large proportion of conflictual possession episodes, but they were also beginning to be able to take turns, play jointly with toys, cooperate and so forth.

Next we would like to look at the relationships between resistance to an attempt take and both the taker's and the owner's prior possession of the toy. In other words, we want to know whether the owner of a toy protests another's attempt to take it as a function of his own possession or as a function of the taker's prior possession. Does the owner's possession of the toy confer on it some special status that makes it more (or less) likely that he will resist another's intrusion? Conversely, does the taker's prior possession of the toy make it more (or less) likely that the owner will resist him if he tries to regain possession?

In Table 4 we see the probability of resistance by the toy owner as a function of how long he's been in possession of the toy. 18-month olds are more likely to resist than not, regardless of whether they've just picked the toy up or whether they've been playing with it for some time. In short, for 18-month olds there is no relationship between how long they've been in possession of a toy and the likelihood that they'll resist if someone attempts to take it from them. For them, the possession rule seems to be "what's mine is mine, period." 24-month olds, in contrast, are much more likely to put up a fight when someone else tries to take their toy if they've just picked it up than if they've had

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it for awhile. Although only speculative, we would like to interpret these findings as evidence of the beginnings of the recognition by the older children that others also have rights to playgroup toys, and that after lengthy possession of a toy it may be another's turn whereas having just picked up a toy makes it "my turn". In other words, the older child may be beginning to differentiate some circumstances that give the peer equivalent claim to a toy relative to their own claim of ownership. Obviously such interpretations, however appealing, will have to await a more detailed look at the possession episodes themselves. Furthermore, because these findings contrast with Bronson's finding that longer possession was related to higher probability of resistance, we must be cautious about generalizing from this sample, or any of the 3 existing samples in the literature, since each of them is different from the others in important ways.

Turning to Table 5, we can see the relationship between resistance by the toy owner to an attempt take as a function of whether the taker has played with the toy in the immediately previous 30 minutes. We see that if the taker has not previously had the toy he's trying to take, both 18- and 24-month olds are more likely to resist than not. Further, if the taker has not previously played with the toy, resistance by a 24-month old toy owner is likely to be more intense than if the taker had previously played with the object for even a brief period. The older children also distinquish whether the takers' previous ownership was lengthy or for only a short time. Thus, a 24-month old toy owner is less likely to resist the taker if the taker had played with the toy for an extended period within the previous half-hour, rather than for a brief time only. So both the older and the younger toddlers seem to recognize that under some circumstances the taker may have rights to a toy they themselves are

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playing with. And those circumstances are when the taker has recently played with the toy. Further, the 24-month-olds seem to be beginning to differentiate the taker's rights according to how long she has previously played with the toy.

The final two tables show the relation between successful takes and how long the owner or the taker has had possession of the toy. There was no relation between how long the owner had had the toy and the rate of success by the taker for either the younger or the older children. In other words, takers were neither more nor less successful as a function of whether the owner had just picked up the toy or had been playing with it for some time. In the next table, though, we see that among the older children successful takes were related to how long the taker had previously played with the toy. Specifically, when the taker had previously played with the toy for a lengthy period he was more likely to be successful in regaining its possession.

If we take these data together, they seem to suggest that both 18- and 24-month olds are coming to differentiate self-centered, personal possession rules that focus on their own rights as a possessor, from shared possession rules that also take into account the other child's status or rights as a possessor. In other words, it appears that the 18-month old operates for the most part under a personal rule, but is beginning to differentiate a taker's rights from his own as a possessor. The 24-month old seems to have come a little further in this differentiation of the taker's rights, but clearly still does not operate altogether under shared rules.

This research is quite preliminary and only a rather small beginning, with many questions still remaining. For example, do toddlers come to appreciate the claims of others as owners at the same time as they begin to

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differentiate their own rights as owners or is there a developmental sequence? What is the relationship between positive object negotiations and conflictual ones? What role do adults play in the socialization of young children's possession negotiations? Can we be more explicit about the rules that govern possession negotiation at different ages or in different situations? For example, do children use different rules to regulate possession of their personally owned toys than laboratory or schoolroom toys? Do they use turn-taking rules under some circumstances, and prior possession rules under others? What other factors enter into the negotiations and outcomes of object conflicts? Bakeman, for example, has suggested that dominance might play a role, especially in younger children. The attractiveness of the toys may also play a role, as might the sex composition of the group, the children's interest in the toy over an extended period, and so forth. How does experience with peers or with siblings affect the development of possession rules? Not only do we need to look in more detail at the possession episodes themselves, but we must also observe both younger and older children. And finally we need to get a direct measure of decentration in the children whose possession negotiations we're observing if we're to begin to be able to make inferences about the relations between social and cognitive development in this particular sphere.

In closing, we would like to note that this <u>is</u> a beginning. We've begun here to look explicitly for relations between selected peer skills and cognitive development. Such a focus may not only lead ultimately to more complete explanatory models, but it may also provide a foundation for infant-toddler researchers and childhood researchers to consider possible developmental continuities in social and social-cognitive development in greater detail.

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DECENTRATION	NEGOTIATION
I. Self as Agent & Recipient, 12-15 mo. no differentiation of others' actions or intents from own	No rule
II. Other as Passive Recipient of Own Actions, 15-20 mo. beginning differentiatiion of self from other, but self is still the only active agent	"Personal" Rule
III. Other as Active Agent of Own Behavior, 20-24 mo. self and other fully differentiated, with recognition that others' actions and intents independent of own	"Shared" or Mutual rule

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PERSONAL RULE	SHARED RULE
1. Higher frequency of Attempt Take relative to Positive Object Negotiation	1. Higher frequency Positive Object Negotiation than Attempt Take
2. Resistance by toy owner to Attempt Take high, regardless of: 1) Taker's prior possession 2) Owner's duration of possession	2. Resistance by toy owner relates to: 1) Taker's prior possession and length of possession 2) Owner's length of possession
3. Successful Takes unrelated to Taker's prior possession or Owner's length of possession	3. Successful Takes relate to Taker's prior possession and Owner's length of possession

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TABLE 1. GENERAL CHARACTERISTICS OF POSSESSION NEGOTIATION (entries are % of possession related episodes)

Behavior	18 m	24 m	p
- Attempt Take	.55	.42	.03
- Positive Object Neg. (share; cooperate; offer; join play; etc.)	.45	.58	.03
- Resist Take	.64	.64	n.s.
- Successful Take	.45	.56	.10
- Language Mediated	.54	.94	.08
- Self-Possession Language	.01	.11	.04
- Other Possession/ Request	.01	.07	n.s.

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FIGURE 2. PROPORTION RESIST TAKE BY TOY OWNER AS FUNCTION OF OWNER'S POSSESSION

Age		Owner's Duration of Possession: Just Picked Up (0-2 sec)	Short (3-31 sec)	Long (> 30 sec)
12 mo.	No Resist	.48	.38	.12
	Resist	.52	.62	.88
18 mo.	No Resist	.40	.37	.38
	Resist	.60	.63	.62
24 mo.	No Resist	0	.35	.44
	Resist	1.0	.65	.56

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TABLE 3. PROPORTION RESIST TAKE BY TOY OWNER AS A FUNCTION OF TAKER'S PRIOR POSSESSION

Age		Taker's Prior Possession (w/in previous 30 min)		
		No Prior Poss.	Short (1-30 secs)	Long (>30 secs)
12 mo.	No Resist	0	.32	.47
	Resist	0	.68	.53
18 m.	No Resist	.34	.80	.75
	Resist	.66	.20	.25
	mild	.82	1.0	1.0
	intense	.18	0	0
24 m.	No Resist	.26	.33	.73
	Resist	.74	.67	.27
	mild	.64	.89	1.0
	intense	.36	.11	0

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TABLE 4. PROPORTION OF SUCCESSFUL TAKES AS FUNCTION OF OWNER'S POSSESSION

		Owner's Duration of Possession		
Age		Just Picked Up (0-2 sec)	Short (3-31 sec)	Long (> 30 sec)
18 mo	Success Take	.50	.63	.58
	No Success	.50	.37	.42
24 mo	Success Take	.50	.56	.64
	No Success	.50	.44	.36

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TABLE 5. PROPORTION OF SUCCESSFUL TAKES AS FUNCTION OF TAKER'S PRIOR POSSESSION

Age		Taker's Prior Possession (w/in previous 30 min)		
		No Prior Poss	Short	Long
18 mo	Success Take	.60	.77	.40
	No Success	.40	.23	.60
24 mo	Success Take	.48	.55	.91
	No Success	.52	.45	.09

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